Contribution ID: **44** Type: **not specified**

Neutrino masses and $0\nu\beta\beta$ decays in leptoquark models

Monday, 1 July 2024 18:05 (5 minutes)

We explore the potential of neutrinoless double-beta ($0\nu\beta\beta$) decays to probe scalar leptoquark models that dynamically generate Majorana masses at the one-loop level. By relying on Effective Field Theories, we perform a detailed study of the correlation between neutrino masses and the $0\nu\beta\beta$ half-life in these models. We describe the additional tree-level leptoquark contributions to the $0\nu\beta\beta$ amplitude with higher-dimensional operators, which can overcome the ones from the standard dimension-five Weinberg operator for leptoquark masses as large as $\mathcal{O}(500\,\mathrm{TeV})$. In particular, we highlight a possibly ambiguity in the determination of neutrino mass ordering by only using $0\nu\beta\beta$ decays in this type of models. The interplay between $0\nu\beta\beta$ with other flavor measurements is also explored and we discuss the importance of properly accounting for the neutrino and charged-lepton mixing matrices in our predictions.

Title of the Poster/Talk

Neutrino masses and $0\nu\beta\beta$ decays in leptoquark models

Related Papers/Preprints

Primary authors: SANTOS LEAL, Luighi Pierre (Universidade de São Paulo); SUMENSARI, Olcyr (IJCLab (Orsay)); ZUKANOVICH FUNCHAL, Renata; FAJFER, Svjetlana (University of Ljubljana and J. Stefan Institute)

Presenter: SANTOS LEAL, Luighi Pierre (Universidade de São Paulo)

Session Classification: Young Scientist Forum